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AUTHOR Lindsay, John
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ABSTRACT

This study was performed to discern the feasibility of a Pan-African Network of Social Science Information and Documentation Centres and Services that would serve the regions covered by the Economic Commission for Africa (ECA) and the Economic Commission for Western Asia (ECWA). This report on the study outlines the various forms networking can take, provides examples of major networks and institutions currently practicing in the field, and ends with some concrete proposals. The main conclusion is that the body of knowledge or discipline termed "social sciences" cannot be separated from other human activity; it is felt that the social sciences in western Europe exclude a wide range of topics that need to be included in developing countries when considering the development of an information system. It is further concluded that while implementing such a network may be feasible technically, it may not be feasible for institutional, financial, or political reasons. It is also pointed out that there is a shrinking availability of money for such development, and that this is forcing people to be more critical about undertaking such activities. Finally, it is concluded that an incremental improvement of cadre and institution building is needed rather than a grand design, and that such improvement will require a cadre of trained social scientists and information scientists who understand the principles of information system design and can adapt them to the tasks of institution building. (82 references) (SD)

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NETWORKING AND DEVELOPMENT

A FEASIBILITY STUDY FOR THE SOCIAL AND HUMAN SCIENCES DIVISION OF UNESCO INTO THE DEVELOPMENT OF NETWORKING FACILITIES IN THE ECA AND ECWA REGIONS

BY

JOHN LINDSAY

SCHOOL OF INFORMATION SYSTEMS DESIGN
KINGSTON POLYTECHNIC

AND

DEVELOPMENT PLANNING UNIT
UNIVERSITY COLLEGE LONDON

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1. Introduction

This paper arises from a request to look at the feasibility of improving the networking facilities in the social sciences in the regions which roughly cover those of the Economic Commission for Africa (ECA) and the Economic Commission for Western Asia (ECWA).

The specific request is to undertake a study aimed at the creation of a Pan-African Network of Social Science Information and Documentation Centres and Services.

The original terms of reference were a little contradictory, in that part one said that I should undertake 'a feasibility study as a contribution to the creation' and part 2 (iii) said that I should 'formulate proposals and recommendations for the concrete measures'. This is to rather preempt the feasibility study. I have therefore had to throw the net a little wider in the field of information systems to look at the existing infrastructure and facilities, in order to come to a conclusion on what actually is feasible, what is practicable, and what I consider to be desirable.

I have therefore given an outline of the various forms which networking can take, indicated the sorts of institutions currently practicing in the field, and ended with some concrete proposals. My main conclusion is that there is not a body of knowledge or a discipline called the 'social sciences' which can have their information institutions somehow developed separately from the other institutions active in the field. I endorse the general strategy of the NATIS concept and support the building of a general information infrastructure within the developing countries and place the utmost importance on the creation of a cadre of information experts who understand the principles of information system design and can adapt these to the tasks of institution building.

To that end institutions in Europe can make a considerable contribution. But to seek to construct institutions in the developing countries which provide for the information requirements of researchers in the first and new worlds, where information flows in one direction, and in the manner requried by those practitioners in the developed countries, is to engage in just another form of pillage, and should be resisted.

Although the terms of reference of the project did not require me to visit the region, and the funding was not available from UNESCO, I considered it essential to spend some time during the project in the region, and so undertook a two week visit to Cairo and Nairobi, to remind myself of the conditions in which the work has to be implemented. My thanks to those colleagues who were so kind to me during my all-too-short visit.

In this report I have to attempt to avoid a number of dangers following that short trip. I am not attempting to describe or list the information centres in the region. I will however be drawing more heavily on the institutions from which I have had some direct evidence than from those of whose systems I have only second-hand experience. There will therefore appear an imbalance.

Secondly I have personal knowledge only of the institutions and literature of Anglophone Africa. The desire of the Arab speaking people and their institutions to defend their independence of language from English has to be weighed against their desire to be able to have access to the widest possible current material. The institutions of French speaking Africa are in a similar situation.

Thirdly I have become aware of how the particular question in the social sciences of the position of women relates to the Islamic tradition which will give rise to contradictory experiences for a number of workers.

Fourthly there is no point in denying the political complexity of the region. The withdrawal of the institutions of the Arab League from Egypt has weakened the information infrastructure of the region. The intractable problem of the state of Israel, of the Palestinian people and of South Africa cannot be forgotten. Information flows in the social sciences will be influenced by these issues and how they develop.

The bibliography in no way attempts to be comprehensive; all I have attempted is to give an idea of:

some of the information sources easily available;
some of the studies on information systems and networking in Africa and the Arab countries;
some of the studies on the development of networking.

My conclusions are simple: there can be no grand design, what we need is an incremental improvement of cadre and institution building.

2. What is networking?

2.1 'The new ways'.

As has been frequently noted, the drive to re-examine information systems and their design arises from a series of technical changes in the fields of computing and telecommunications, involving:

processing power, particularly the availability of microcomputers; software, particularly simple to use database management packages (DBMS) and word processing;

and the communications facilities for local area networks (LANs) and wide area networks (WANs).

A network now has a quite specific meaning. It is the interconnection of a series of computers such that data can be moved among them in digital form, usually without having to be converted into an external medium. (In other words there is a little confusion about whether if a disc or tape is used to transfer the data rather than simple machine to machine connection, one is still talking about a network in the new sense of the word, rather than an extention of the old sense.)

A network will either rely on a mainframe or powerful machine with a large-scale storage faciltity (at least a hard disc), which will act as the main data store, from which others will draw down data as required, work on it and then pipe it back up again; or sets of distributed data, which can be accessed from remote terminals. In turn the scale of the operation will be measured in the number of terminals which can simultaneously and interactively utilise particular data. The design of the information system will be concerned with the specification of the types of machines, their physical location, the form of systems connections, the definition of the data to be held, the procedures by which it can be accessed, the security of the system, and the operations to be performed on that data.

The idea underpinning the network is that a particular piece of data should ever be entered into a system only once for maximum economy. That data should be available to as many different people in as many different places and at the same time if necessary as the operation of the system requires. The economy of the system is the measure of the beauty of the design of the system.

There is a certain tendency to say that this sort of technology is unsuitable for developing countries, where they must be limited to the technical capacity of the lowest common denominator.

I would wish to argue against this, indeed to say that the term 'a developing country' is confusing. Instead the idea of combined and uneven development is more useful. There are aspects of work in so-called developing countries which are as sophisticated technically as that found anywhere in a so-called developed country. The weapons of the armed-forces, the information systems of the banks and airlines, come obviously to mind. In terms of the concerns of this paper, the banks and airlines show the technical feasibility within the countries in the region. Leased lines from the national authority for posts and telegraphs or telecommunications (the P&T) are available twenty-four hours a day via landline or satelite for data transmission. Alternatively packet switching is booked for a particular time and data batch processed if on-line contact for 24 hours at maximum rates is considered too expensive. National policy on transborder data flow is a matter to which I shall return; at this stage the point I want to make is simply that it is technically feasible. (see IBI).

At the same time we do need to be clear about the actual limitation in real practice of using this technology. Recent work in Europe has shown that institutions in the social sciences and in development lag far behind similar institutions dealing with the physicial sciences. In the developing countries development insititutions and universities lag far behind the banks and airways.

In most big universities in Europe and North America the main library catalogues are now computerised. Some are accessable via a network, The Quartet research project in Britain is dealing in part with developments in this field. On a single campus different departments will be networked via electronic mail,as will institutions in different universities but the movement of data in any sort of systematic way among these institutions is still at an elementary stage.

There is of course more to networking than library catalogues: the Central Statistical Office is publishing data on floppy discs, electronic publishing, the PACSAT experiment for sun-synchronos data transfer, even at this stage SWIFT and SITA all indicate the tentative stages much of this work is still at.

2.2 'The old way'

The old idea of a network was a much more people-centred idea and much more concerned with communication and interaction as goods in themselves. A network in this sense is a forum for communication among people who have a community of interest. A network is formed because a group of people in a particular discipline articulate a need to know what one another are doing, to share their experiences for the mutual benefit. It is a form of organising an information economy which has to be distinguished from the marketplace of commercial publication as the most effecitve form of communciation.

Publishing and correspondence was the classic academic way by which ideas were spread, but with the growth of literacy among the population at large and the increasing division of labour within academic disciplines developed the need for people working in similar or overlapping fields. Historic discipline boundaries began to break down which made it necessary to be able to communicate, to share evidence or experience, and to be able to do it more quickly than conventional publishing allowed became an urgent need. But in turn with the proliferation of practitioners it became more and more difficult to balance the division of labour and the breakdown of disciplinary boundaries. Thus the growth of these informal networks. It is still the invisible college which functions functions as the major source of information. Gossip must not be undervalued.

In addition in the developing countries much of the information infrastructure of the developed countries does not exist, there is an element of cultural imperialism in the production of the social science of the developed countries, much information is proven to be unsuitable and the information industry generates material at much too high a price. To be able to set up self-defining groups, where the definition of relevance or truth grows out of the particularity of the problematic, where the practitioners are able to validate their experiences, and test their values against the cultural traditions and mores into which they are incalcated by the 'training' they receive at the hands of the developed countries, is of value.

In turn the practitioners from the developed countries, particularly in the post-1968 period, saw the value of the connection of equals rather than the giving of wisdom, and so networks developed linking the developing countries and the developed in a status of equality, or at least that was how the theory said it should have been. In practice as one was paying and one

was receiving, the inequality reasserted itself - he who pays the piper calls the tune.

There are then four quite different actors in the network. There is the African scientist in Africa, now often in a government ministry or with a university, seldom engaged in 'pure' social science, but much more concerned with policy and application, validated by the political vagaries of trying to develop an economy. Then there is the European scientist in the field, often engaged in 'pure' science (not to be confused with 'voyeurism'), subject to and seeking validity in the definitions of western practice. Thirdly there is the African while studying in Europe, trying to gain the qualification, on aid funding, which will be the key to further privilege in government, yet also trying to pick up those parts of knowledge which will enable him to understand what is the process of national development. Fourthly there is the western scientist in the west, surrounded by all the richness of our information institutions, trying to teach what should be best practice, trying to synthesise all the complex evidence in order to refine it into coherence.

Though there will be a certain amount of role shifting among the different actors, they will all appear in the same network.

3. A technical note

This note has been kept short and cryptic deliberately; should a more detailed discussion of the technical questions be required, this could be done as an appendix.

1. My research for an earlier paper indicated that few European development institutions or institutions concerned with training, research or documentation in the social sciences related to developing countries are currently computerised, though many are at the planning stage.

2. At the level of major national and international institutions concerned with the social sciences in general, of which the third world, or pan-African component will be only part, there is a higher level of computerisation, though those with an earlier generation of of machinery such as DSE, SOAS are now at the stage of having to investigate their upgrading procedure.

3. Technical changes at the level of microcomputers, disc formatting, CDROM, software particularly database management systems (DBMS), telecommunications are removing many of the previously insuperable problems of incompatibility. However the technicial complexity still requires skilled intermediaries and some level of equipment which is not necessarily easily available. The availability fo skilled typists often means that rekeying data is actually a more simple solution. These intermediaries are likely to be in short suppply in the developing countries.

4. At the level of institutions with access to the PSS or PSTN networks moving data is now much less of a problem. Project Proteus showed the feasibility of moving files in formatted databases from dBaseII for example into INGRES, from a micro to a mainframe on another site. The PACSAT experiment has shown the feasibility of store and forward data transmission from a BBC B micro to any machine capable of receiving ASCII standard sequential files via a dish receiver. Project Apollo takes these experiments a stage further. (See Tuck for a summary of current practice.)

International movement of data where different character sets and different scripts are in operation increases the complexity. The work on Arabic scripts in now far advanced. Competent word processing and database packages exist. Translation of training materials and the building of a thesaurus are under way, for example at UNCHS.

5. Within the pan-African region there are the widest possible range of machinery. The work of the ITU and the standards network appear to have ensured that there are no insuperable technical problems in moving data. There are however considerable political problems. Judging from reports of conferences organised by the Intergovernmental Bureau on Informatics, national governments appear to think that their PTTs will be able to exert some control on the movement of data internationally and across their boders.

6. The UN Radio network will allow for the movement of data among all UN institutions in the region and Europe, via New York. The work of the ACCIS in improving the informaiton organisation within the UN appears to be making considerable progress.

7. The Open Standards Interconnection documentation gives a clear understanding of the seven levels at which stanards of data communication need to be agreed. The SNA design supported by IBM makes a very similar argument.

8. I think that movements in the market indicate that worrying about compatibility should not be an impediment to taking decisions for the institutional structure with which this paper is concerned is still so weak that progress in this field will far outstrip progress in the institution

isolation from others, and for inter-departmental rivalries to positively prohibit communication. In addition it is frequently the case that the possession of information is seen as a possession of power or a protection against discrimination; to share it is to involuntarily given up a source of power.

4.1.3 For the social scientist engaged in academic work and teaching, much of the above still applies. There is possibly here a greater tradition of freedom to define priorities and allocate work schedules, and a greater tradition of recognising the importance of participating in collective work.

However there is also a tradition of the individual creation of ideas, and a lack of desire to communicate until the contribution is fully defined. Communicating partially-formed ideas, in the form of a working paper, distributed to a group of fellows - the 'invisible college' has emerged as a bridge between the isolation within which the individual can create, and the process of refereed papers by which findings become public.

The collection of the Economics Working Papers of the University of Warwick, published by Transmedia contributes to a network to which I will return.

4.2. The Nation

In many countries the metropolitan city will be the major focus of all communication and information organisation. The information flows within that city and the institutions of information will be almost identical for city and for country. The only other concerns will be the flows into and out of the centre to the small towns and villages which will be in a subordinate and predominantly information-supplying relationship with the centre.

In countries without such a clear wheel-spoke model, with more of a constellation configuration, the development of a formal network becomes more important. In either case there will be two major components.

4.2.1. THE "ASSOCIATION"

A look at Yearbook of international organsiations*, will give an idea of the rich complexity of bodies which are in some way or another concerned with the dissemination of information in the field fo the social sciences. In OECD member countries there will in turn be a national network of committees and consultative bodies, many publicly funded, which allow for extensive communication.

In developing countries this is not the case. Simply looking at lists of member countries for these international organisations almost gives a criterion for 'development'; there is a marked drop-off once the first twelve or so have been passed; it is this absence of institutional infrastructure which prevents take-off in the economy of scale for a whole range of subsequent information activities.

An Association is usually dependant to a large extent on the voluntary and unpaid work of its members, and their contributions for its funding. Its journals and newsletters, meetings and conferences, provide an important mechanism not only for the transmission of information, but for the forming of the invisible college. It also provides the vehicle for training and the validation of qualifications.

4.2.2. THE "NATIONAL INFORMATION CENTRE"

The NATIS principle outlined the need for national information centres in the field of the sciences and technology.

The DEVSIS programme outlined the need for development information centres.

I would support the argument that the developing countries cannot afford and do not need the division of labour apparent in developed countries where each institution or discipline tries to produce its own complete set of information facilities. The recognition by many national documentation centres for science and technology in developing countries that they are responsible also for the social sciences seems to me to be correct.

To try and set up a network of national centres dealing with the social sciences as a new enterprise would be a mistake. The key task is the strengthening of what exists.

Later I give some examples for forms which have developed for these institutions. It might be useful here simply to list types of institutions which might link to a NIC as an aide :

the national referral centre or national focal point (ie no major collection of information or documentation exists, simply the necessary information to be able to refer to other collections)for one or more international information systems;

the national deposit library archive or documentation centre, a single major collection, possibly also responsible for the production of the national bibliography (national statistics and cartography might also be recorded here);

the university library - often only one major collection of non-national material for teaching and research. It is my experience that these collections improved during the 1970s but there seems to be a general pattern of deterioration from the begining of the 1980s. Journals and annuals stop, bookstock becomes dated. However it might well still produce:

1. a list of serials, which will approach a list of serials available in the country, (many univeristy libraries though have this list only on Kardex - computerising and making available such a list is a contribution to networking which would be worth the effort. I'll return to this point later.
2. These libraries too might be responsible for the production of lists of theses accepted for higher degrees. Maintaining these lists up to date and making them available to a wider audience is another important function which they could be performing to which I'll return.
3. The lists of working papers, exchange agreements, staff publications, all of which the smaller insitutions might not be able to sustain.

An interventionist stance by the university library, which might be able to gain international funding, rather than a purely conservationist stance is a topic of discussion on which more case studies would be useful.

an Institute of Development Studies - a department or institution within the university which will maintain a documentation centre, a mailing list, produce a newsletter, a list of publications and an annual review. The working papers, occasional papers and other fairly cheap and easy to produce publications, exchanged with similar institutions, are the foundation of a network. Increasing the regularity of these publications and including lists of ongoing projects would be an important contribution.

other institutions - within the university and associated with it will be a range of institutions engaged in teaching, research and publication covering issues such as population, statistics, demography, economics, labour, administration and so forth. Even on one campus

they might well not communicate effectively with one another. I'll return again and again to the point that networking is as much an attitude of mind and an organisational question. People might well communciate better with another country than across a room.

the key individuals - it is my experience that the development of an effective information system, rather than an infrastructure, depends on a few, sometimes only one, key individual who builds up the personal experience and contacts to be the central node of information. This is the informal system which will never get into a directory or documentation centre, but finding this key individual is essential when moving into a field of work which has not traditionally been central to your interests, or when moving into a part of the world with which you are not well acquainted.

The idea that training should increasingly include third world to third world counterpart training, rather than a flow between third world and developed countries, will mean that these key individuals will have an increasingly important part to play.

other national institutions - there are governmental bodies such as the national office of statistics, the national survey, the telecommunications ministry, the national computer centre, which are essential components of a national information infrastructure. The contribution which a National Information Plan makes to good use of all these resources needs further work.

Worth noting here is the amount of support which these national asociations and institutions receive from comparative institutions and associations in the developed countries. In terms of the possibilities for developing networks, further elaboration of these links would be valuable. The Assistant Librarians' Association of Britain as a most trivial example pays the Swaziland membership of IFLA. Many librarians engage in voluntary exchanges which are so unequal that they amount to gifts.

Directories of national information points and inventories of information stocks have improved during the past few years. There does not appear to be a survey of National Information Plans or of information stocks to parallel Hannam for Africana collections, Gorman and Mahoney for national bibliographies, Pinfold for Census reports, the Commonwealth * or World of Learning for Universities or the OECD for Development projects or research and training institutions. Many of them are one-off snapshots rather than institution building long term initiatives.

In turn accounts of these initiatives tend to be even more sparse. What is needed is the institutional form which will enable these initiatives to be maintained. I have listed the more easily available directories in the bibliography. These directories are widely available in large libraries and research centres in developed countries but up to date versions are much more difficult to come by in developing countries, except in UN establishments.

4.3. The Region

In this section I am dealing with supra-national geographic or geo-political regions and their information infrastructures.

Regions become defined or define themselves as a result of historic, linguistic, trade, or communications histories. In the parts of the world with which this paper deals, there are a number of classifications which we have to take into account:

the Arab region - those countries where Arabic has historically been the dominant language;

the Anglo-phone region - those countries which were part of the British Empire, or where English has historically been the dominant language or the language of government;

the Franco-phone region - those countries which were part of the French Empire, or where French has historically been the dominant language or the language of government;

the Mediterranean region - the countries around the Mediterranean, including parts of the Middle East on the eastern sea-board and parts of Africa on the southern sea-board;

the Middle East - those countries sharing a geo-political association, partly as a result of the petroleum economy and partly from the demise of the Ottoman Empire;

SAHEL - the countries of Africa south of the Sahara;

SADCC - the economic regional formation designed to limit the economic domination of the Republic of South Africa in the region;

East Africa - the countries of the eastern seaboard of Africa;

West Africa - the countries of the western seaboard of Africa;

and so forth.

Within a number of different academic traditions these divisions will be seen differently or assume different significances, the channels of communication will vary as will the flows of information. Where specific institutions have been set up to foster regional communication or development, these institutions influence networking within the region and local or national information infrastrctures.

(Many of these regional concepts also represent highly western traditions - the idea of the orient, for example, references to near-East and Middle East, and the literature reflects those traditions, the German archeological interest for example. It is for this reason that I have argued elsewhere for a limiting of the central concern to public policy and planning documentation rather than all the historic baggage of the social sciences.)

Most of these regional institutions have been formed with the funding of the United Nations. As such their major flows of information appear to be within the UN. Often they deliberately restrain themselves from having a direct connection with the country within which they are located to avoid accusations of imbalance. There are in turn a variety of political pressures which influence their operation. Also most striking is the luxury of their appointments in comparison to those of the national institutions.

The staff of these regional centres appear to have much greater facilities for travel and attendance at conferences and seminars, better access to telecommunciations and through the UN Radio network the possibility for data and communications flows internationally beyond the reaches of the national P&Ts.

They are adequately listed already (Dundis et al) so there is liitle point in further listing here. See PADIS and ARSO as examples I've discussed in a little detail.

There are then various types of regional organisation which although partially funded by international bodies and helped by international aid agencies, involve people and resources local

to the region. CODESRIA I have described in more detail elsewhere in this paper. These associations have grown out of the need for professionals in the region to develop the same sort of institutional stength which supports the national institutions, but with the recognition that they have a regional interest, or that there is insufficient strength within a country to support such an association.

These associations and their officers change frequently; an improvement of a mechanism for keeping up to date and easy access to mailing systems would be an advantage.

4.4. International Bodies

4.4.1. It is seldom that the initiative for the setting up of an international body will have come from a developing country. Rather the network of international institutions which have developed since the nineteenth century will have either the mandatory third world country members if it is an intergovernmental body, or a sprinkling of third world members if an association. In most cases the third world component will be of marginal interest to the majority of its members and the specificity of problems of the developing countries will receive scant attention. There are then the organisations devoted specifically to areas of the third world.

Many of these international organisations are adequately documented,(see bibliography) so don't need listing. What is necessary though is much more co-ordination where their interests overlap. Let me give a small example from Britain. (These are not in themselves international bodies but they all contribute to at least and often more than one.) The British Computer Society has a Developing Countries Group. Its membership is self-selecting. The United Kingdom Council for Computing Development exists entirely to promote British computing expertise in the third world. The Library Association has an international committee. ASLIB has some members who do consultancy work in developing countries, as has the Institute of Information Scientists. The British Urban and Regional Information Systems Association has a small number of people who are interested in developing countries. The Development Studies Association has a small number of people who are interested in information systems questions. The European Association of Development, Training and Research Institutes has a small number of members who are interested in information systems. The British Council funds people from the developing countries to come and work in Britain and in turn funds British expatriates to work on projects in the third world. The British Library, although concerned with British librarianship recognises the possibility of development work being in the interests of information consultants and information services providers.

From this collection it is then possible to define a field of interest of information systems and developing countries. Beyond that things become complicated because some people are interested purely in the technical questions, some in selling kit, some in development studies, some in policy , planning and implementation; there is no perfect overlap, but a sufficient community of interest that they can meet, have a newsletter, maintain a mailing list, organise a depository of grey literature and documentation and provide a service for participants from developing countries while in Britain.

4.4.2. International bodies are in turn the major organisers of international conferences and seminars. It is becoming increasingly common for these to take place in developing countries, to be brutally frank because they are cheaper and more entertaining. This can mean though that third world participants are more able to attend.

Conferences which are held in developed countries are often attended by third world participants because the real value of their experience is required. This makes social science

conferences quite different from those of the natural sciences. There is also the facility provided in a number of associations of twinned third world bodies being subsidised. Funding of third world particiapnts is in turn sometimes linked with an opportunity for participation in a training exercise.

Levels of participation in turn are influenced by the funding agencies in terms of their development strategy. IBI has emphasised clearly its intention of influencing policy makers so it will be high level politicians they will fund, the British Council is engaged mainly in the training of middle level managers so that is the level that they will make available.

A better organisation of the information on training courses and international conferences would make more effective the planning of overseas participation. We would of course come across the pattern of national funding from aid agencies which has been referred to before.

4.4.3. There are also organisations devoted to the provision of information services. These need to be divided into three types, those for whom the provision of public domain data is their prime function, those for whom it is one of their activities, and private sector companies engaging in the exercise for profit. (At one level this distinction is no longer valid as many public sector activities are now required to be operated either with full cost recovery or to make a profit.)

The functioning of most of these services regards development or the third world, or for that matter the social sciences as secondary or tertiary, Even those for whom this subject matter is the primary consideration still regard actual practitioners in the developing countries as a small proportion of their potential users.

I do not want to deal with in detail here with the economics of data provision and transmission. To the extent that these organisations sell or give data, the data requirements of practitioners in the third world are of minor importance. Very few of these services are actually running at any sort of a profit and the push to greater efficiency is going to make the costing of every operation more likely.

The failure of these initiatives to find a ready market though it has to be said is not simply a matter of the failure of communciation. They have in the main been supply driven. There has been insufficient attention to the actual information needs of practitioners. This is understandable - there is only a certain benefit to be gained from asking people what they would do with something which doesn't exist; yet the proliferation of information systems which have been set up without any study being made of the potential users, a marketing strategy or, most noticably, any monitoring mechanism so that real implementation and effect can be demonstrated. (See the work of DG13 of the EEC for comments on the information market. It is regrettable that they have given so little attention to the specificity of the third world.)

Martha Williams' documentation of existing databases* is also available as an on-line file. I do not feel it is necessary to repeat this work here.

At one level access to these databases is not networking, for they are one-way information providers. There is though the point worth making that increased contributions to these databases from workers in the developing coutnries will improve considerably the access to third world generated literature. Indeed it is worth pursuing the possibility that they have information worth selling.

The costs of accessing this data is expensive. There are examples, such as the US.AID office in Cairo, which subsidises the British Council vouchers for on-line searching and the

British Library document delivery service so that a search costs $5. This is still a lot of money though.

The most obvious areas worth pursuing might be that of PhD theses literature. Dissertations Abstracts Online,, comprising an on-line database, published catalogues and the marketing of the theses on microfiche or hard copy has proven to be a profitable subsidiary of UMI. The acces which it gives to the US PhD literature in turn probably helps the career development of US PhD students. Some other universities are now involved, for some reason particularly from South Africa and Hawaii. Where a university library is already compiling theses lists, becoming an information provider is potentially profitable.

A similar area must be the extention of the creation of national bibliographies into contributions to MARC format iinternational databases. A number of national bibliographies are in the process of considering computerisation. The availablity of the LC MARC files on a CD ROM, 25 million citations for about $2,000 is an indication of an important step in the universal availability of citations, if not publications.

It might be worth simply noting here ICANAS, the International Congress for Asian and North African Studies, SCOLMA, the Standing Committee on Library Materials on Africa,MELCOM, the Middle Eastern Committee, ECAS, the European Council for African Studies, DG8 of the EEC whose blue pages database is nbow accessable online, World Exporter, mounted by Datasolve, which includes the Plans and Projects Monitor and International Risk database, and the UN ACCIS Register of Development Activities, Habires, the joint IRB(Stuggart) and Habitat(Nairobi) database on human settlements institutions, and Sarah Joynes' work on documenting theses in African Research and Documentation.

I'll add to this and go into more detail if this is wanted.

4.5. Corporate Bodies

It might have appeared more logical to include institutional networking among corporate bodies before cities as they often have a smaller geographical area to cover. However they can also range up to the international, such as banks and airlines, so I have included them here. This might be the best place also to think of the work of the Aid agencies as the literature now so significantly notes their interests are tied to their countries that it would be a little romantic to think of them as having other than a commercial and partisan interest.

Within an institution the need for networking, or more generally communication, might appear self evident. It needs to be pointed out though that institutions are not rational or clearly goal-seeking. They contain contradictions and conflicts of interest. As far as the work of social scientists is concerned we must divide between those employed within those companies and their information needs, and those who do not work for them, but will be interested in them as inforamtion creators.

The role of the multinational corporation in developing countries is now a very well worked area. There is an entire UN agency devoted to the question (UNCTC), which manages to generate its own body of information as well.

The particular contribution of the company to the development of networking of information services for social sciences in the developing countries must include their contribution to expanding the market, the number of trained people they will put into the area, the increasing contribution which the private sector in western Europe is making to research and information dissemination, the kit they will install contributing to a general improvement

to the computing infrastructure, the increase in international travel and their training facilties and requirements.

They are of course also working with a much more closed body of knowledge and much more restrained in their activities by the direct requirement to generate a profit. They are also often seen as being piratical outsiders whose intention is to strip off a profit from the developing country.

In this area it is much the matter of the concerned individual who can provide the gateway.

5. Examples of large networks

5.1 INFOTERRA

Infoterra is an example of a large international information system, the largest located in the African region.

It became operational in 1977, five years after the UN Conference on the Human Environment which resolved "to organise an international referral service for sources of environmental information".

Its structure is that of a central organising point, in Nairobi, within UNEP, and a network of national focal points (NFPs). The focal points collect information from within their countries of institutions which are concerned in environmental information and send that material on Nairobi, where it is edited and and then sent to Geneva where it is published once every two years published as a directory, with six-monthly supplements.

Data is sent to Nairobi in whichever medium the NFP can handle. Centres with scant resources may fill in a questionaire, for more advanced organisations a standardised coding sheet is supplied, and more advanced institutions still may supply their data on magnetic tape or disc.

For the 1985 edition the decision was taken to make a much more thorough weeding, with the help of the NFPs, so that quality rather than completeness became the criterion. The result is about 5,000 entries, down from 10,000.

Most countries in the world now have NFPs and submit data. In turn they get a copy of the directory and its supplements, in hard copy, and can be supplied with the data as magnetic tape. Other than the one copy which is supplied to the NFP institutions must buy the data, for about £150.

The idea of the international referral service is that a query originates in country and is sent to its NFP which in turn passes the query on to the most suitable organisation. Queries sent to Nairobi are passed on to the appropriate NFP, except in the cases where no NFP exists, in which it attempts to act in that function.

In an evaluation conducted in 1981 John Martyn said "It can therefore be said that the original mandate has been fulfilled in terms of the existence of the structure which was required to be created." He went on to say however "The level of use is also low, although it should be remembered that Inforterra was not designed to replace any existing system." An evaluation by Earthscan was somewhat more direct in its criticism.

The point of objection is firstly that the process of correspondence to a national focal point is very slow, particularly when the only output is a referral to an agency. This has been speeded up by the NFP forwarding the query to the referral point, but in turn the enquirer is dependent on that institution's efficiency.

The second objection is that usage is very low. Figures for 1984 indicate 10,000 recorded referrals, an exponential increase over the previous years with the real possibility that this exponential increase will continue. But this is a low use for a system with 5,000 entries which might have cost $10 million to set up over ten years.

In comparison to other types of networks which I'll survey, this has been very heavily funded. In comparison too though, it has succeeded in building up a network of institutions with

a good worldwide geographical spread which has led to institution building in some developing countries. The basic structure of a centralised publishing point with data collection, validation and generation being decentralised is a model for us to bear in mind.

It might also be justifiable to say that the changes in technology over the past ten years would make establishing the network from scratch a lot cheaper now. Publishing the directory in a variety of media, is now much cheaper at almost every stage. Training in database design and structure requires a much lower level of computing infrastructure.

Given the effort by UNEP to build up the Infoterra network, I must sound a note of surprise at the existence of the EECs ENDOC and an incomprehension at UNEP also developing GRID.

The bulk of the data organised by the contributing institutions falls within what would be generally regarded as the technical, and outside the scope of the social sciences. In the field of development there is a blurring of borders between the technical and the social, and Infoterra's definition of the environment means that much of the environment is social and is therefore in fact included. In addition, in terms of the general thrust of my argument on the development of the NATIS idea, the division of labour in developing countries does not allow for too extensive a classification into what institutions are those of the social sciences. Many cited in the Infoterra directory appear also in DARE.

All this having been said though, I will return later to whether this enormous expenditure is in fact justified. In terms of it ever being available again, I must rule out the Infoterra a model for a social sciences network being established either ad abnitio, or from the links which currently exist.

5.2. JANET

The Joint Academic Network is a leased line from British Telecom connecting the 43 British Universities and a number of other institutions. Each main computer site has a node on the network (which is in effect a computer organising the messages to flow into and out of the network).

The users within a College are the users of that College's computer facilities. When they wish to use the network they log onto a PAD (package assembler-disassembler) which bundles their messages, sending and receiving, through the network to the other host computer with which they wish to communicate.

Clearly the most important use of this in our field is to be able to search external library catalogues or databases being spun within the network. From the network of course we can then get into the PSTN (the usual voice telecommunications network), the PSS (the digial packet switched network) or the IPSS (the international PSS). This means that any microcomputer, provided it has a terminal emulator (a mechanism by which it acts as a standard terminal) can then 'talk' to any other computer within this extended network, without the need for a modem. Within the network all communications and computer time are free to the user, being met out of a common fund. Only when accessing the public (which since the privatisation of British Telecom presumably means the private) network than the immediate user has to make some financial arrangement.

The GEAC system of shared catalgues within six colleges of the University of London has now provided access to a very large database. Unfortunately the software is insufficiently sophisticated to allow for searching, but the next system review will be taking this into account.

It might also then be possible to reserve a document, or order it on-line for linter-library loan. Conversly as a result fo the cuts, while on the one hand libraries might reduce their stock seeing that someone else has something already, libraries might be more inclined to limit access from other than their own members, as had happened with the Institute of Education.

For the institutions concerned with development policy this is clearly enormously important as almost all are small and badly funded institutions. Without the work of the JANET we could never have achieved the level of co-operation we have. Yet we have to be aware that the technicqal advances simply open up new policy options which have to be fought for - they wont happen automatically.

The next stage of experiment will be mounting CDROMs within JANET so that large databases do not take up valuable store capacity.

In addition to JANET, there is also the European Academic Research Network (EARN) funded by IBM until 1987. This network covers most of Europe and in each country there is a host node.

There are of course many other networks and electronic bulletin boards which are being used for all sorts of purposes. Directories are published in all sorts of specialised journals.

In addition to a terminal emulator chip, if you have a piece of software, the version we used called in slang a 'Kermit' then you may not only use your microcomputer as a terminal emulator, but you are able to move files in and out, into a network, and into other machines. While this does not mean that a software package can necessarily run simply as a result of being ported over, it does mean that text and sequential datafiles can. In turn with a reformatting package datafiles with a different data structure can be reformatted.

I have given in a little detail an example of a computer network partly to show what is feasible and partly to show how institutions with very little funding can make use of the work of more richly endowed bodies. The argument can I think be transported to developing countries even if something as sophisticated as JANET is not yet practicable.

5.3. Other networks

A number of recent reports indicate the amount of preparatory work which is necessary for the effective implementation of a networking arrangement. I have referred to work undertaken in Australia and Canada in the bibliography. The work of LASER, BCLMP and SWALCAP in Britain is already well known.

Urban Edge for April 1986 goes into some detail on how the EDI has set up a network of training institutions which I refer to in the section on training.

The conclusion which I think comes from s study of these exercises is that a network with sme formality to it, one which expects input and output to conform to any degree of rigour, requires enormous resources, significant funding and considerable dedication of cadre over a long period of time: the three requirement often not available in the region. It is for these reasons that my preference goes to building individuals and institutions gradually.

6. Examples from the Region

6.1 SINA

The Settlements Information Newsletter Africa, organised from the Mazingira Institute in Nairobi gives us an example of how an informally organised network can develop.

The Mazingira Institute is an independently funded institute carrying out interdisciplinary research and project implementation in the field of human settlements. Their main medium of communication is a newsletter, from which the network developed. They define their purpose as "people working on self-help settlement projects in Africa who have indicated their wish to receive newsletters regularly by filling in a membership form". In other words the community of interest is self-defined by sector, by region, and by commitment. There is no formal qualification so participation does not indicate any particular quality.

In addition there are as members libraries and information centres which will have defined themselves as members by the effort of getting onto the mailing list.

Membership is not limited to people working in Africa, as those working outside the region may participate on payment of $25 per year. There is for them another commitment to participation - payment.

The newsletter gives information on projects currently underway, chances to dicuss implementation problems and funding sources, news of conferences, seminars and training. The Mazingira Institute itself cannot afford a documentation centre so it is unlikely that any more formal information system could grow out of the network.

The SINA network goes a stage further than simply producing a newsletter. The membership list of the network is published from a simple database. Printed on A3size paper, in alphabetical order within country and in country alphabetical order, it is easy to see who is working currently in a particular country. Fields in the database are name, discipline or area of interest, work address, contact address, city, country. The most recently published list runs to 6 sides of A3, about 300 people, mostly in Africa.

This database has been mounted on a microcomputer installed as part of a project funded by IDRC. The setting up of the project meant not only the ability to install this database, but to provide an implementation and training exercise in office automation which will strengthen the training capacity of the institute.

Funding is clearly the major weakness. In addition to overseas subscriptions, those working in the region who earn hard currency are also expected to pay $25 per year. This does not lead to a secure financial base; the project has been dependant on external funding, the drying up of which means the likely demise of the network.

Given this weakness in funding it is a little suprising to see the Institute engaged in a more adventurous exercise developing a network for the region of the Indian Ocean, the Issue-based Indian Ocean Network (IBION). A seminar held in Mauritius in 1985, funded at least in part by IDRC, launched the enterprise, the secretariat of which is now at the Mazingira Institute. Regional networks of this type lead a precarious existance unless they either receive considerable public funding, an interested benefactor, or support from a pressure group with a particular concern, in which case they are compromised.

It is also involved in the Information Exchange with Children (IEC) Project which

provides information to children in comic form with feedback through competitions.

A general query which must arise looking at this sort of institution is how one might decide whether its activities justify public funding or are better left to the vagaries of private benefactors. The relationship between the market - if it can't find funding it doesn't deserve to exist; networking as a rational organisation of resources; and the planned setting up of major information institutions is a topic to which I shall return.

6.2. PADIS

The idea of the Pan African Documentation and Information Service was one of the DEVSIS initiatives, funded and strongly supported by the IDRC.

The idea behind DEVSIS was that there should be developed a network of international institutions, one per country and one per region, within which the documentation of that country and that region should be organised. This would not be the published literature which falls to the responsibility of the National Library Service, nor the formal archive, nor the statistical centre, but that fugitive literature which is the particular requirement of the development worker in the field, and where the immediacy of retrieval is more important than the historical interest.

IDRC offered and funded the technology necessary to set up a number of these Devsis, one of which was located in Addis Ababa.

The difficulty of developing such an institution though was underestimated, as the reliance on a single software package running on a single machine was overestimated.

A recently a detailed evaluation of PADIS has been undertaken and with the publication of issue 1 of a PADIS newsletter it looks as if the development of the centre might progress. The existence of the ILCA in Addis Ababa with the concentration that organisation is putting intot he development of information systems might help to build up the infrastructure. It will require however the considerable reosurces of the ECA and other parts of the UN network as well. I regret that I was unable to visit it as I am sure that its development will be esential to networking in the region.

6.3. ARSO

ARSO is the African Regional Standards Organisation, which, under the aegis of the International Standards Organisation is setting up a network of the national standards institutions inthe region, which has been in operation since 1977, now with 21 member states. It prepares and issues African regional standards, tests, certifies, provides technical information, training and international laison. Its documentalist, Makane Faye, undertook a survey in 1985 of the documentation centres of the member states, and in March 1986 ran the first regional seminar on training on documentation and information systems, which provides an interesting example of what is possible in the region with very limited funding. This method of work: a survey undertaken by an experienced practitioner, a report with development programme and budget, then a seminar for the most experienced practitioners seems an effective way of getting a state-of-the-art appreciation.

From that point it is possible to indentify the areas of work where pump-priming funding would allow for maximum benefit, or where a breakdown is likely to occur if some emergency funding is not allocated. I think the ARSO exercise is worthy of further study.

6.4. CODESRIA

CODESRIA is the Association of Development research and training institutions in Africa, a counterpart of similar organisations in other parts of the world, including EADI in Europe. They have been engaged recently in setting up a regional network whose central node will be situated in Dakar. The organsiation has been involved since the 1970s with the OECD Development Centre in the production of the register of development research projects, the most recent of which appears to be 1983.

The IDRC recently funded an evaluation of the OECD DC work, a conclusion of which is that IBM compatible microcomputers should be set up in the five regional centres of the ICCDA network, running micro CDS ISIS, supplied free from UNESCO. In addition training should be provided. The first of these training courses has now been run.

The implementation of this programme will undoubtably be closely monitored, and information on its development widely circulated. That it links in with the work of PADIS, UNCHS, the UN ACCIS Register of Development Activities, UNDP and EEC DG8 might be ensured by extra funding specifically directed at this.

6.5 Brief Notes

The University of Ibadan in Nigeria has established an African Regional Centre for Information Science, funded by IDRC and UNESCO among others.

SCAUL, Standing Conference of African University Librarians has met periodically, produced a journbal, issue 17&18, 1983.

SCECSAL, Standing Conference of East, Central and South African Librarians has held its 6th meeting in Harare in 1984.

ASCOBIC is well documented in UNESCO reports.

This section I will add to as I hear of anything else.

7. A note on training

Surveys have been done on the availability of training courses in the region for information scientists in the social sciences, and training social scientists in information skills. There have also been many from the region who have been trained in western Europe and the US. What tends to happen though is that although they receive a general training which out-of-country, it is more difficult to relate what they have learned to their domestic experience. In addition it is also recognised that much training in developed countries is inapposite for practitioners from the third world.

I think there are very strong arguments for organising in-country or in-region seminars every couple of years for those who have received training overseas in order to bring them up to date with developments and in order for them to have a chance to desribe their work development, present papers, and receive comments from other practitioners. This training might follow the pattern of that developed by Tom Wilson and Frances Wood of Sheffield University, which they ran in Addis Ababa

I think there is also an argument for funding visits be teaching staff to the region simply to complement the out-of-country training, though this can probably be best linked to the running of seminars.

Throughout the region there appear to be extremely experienced practitioners working in relative isolation - see my earlier notes on networking within a city - for whom should be devised the mechanisms by which they can contribute a training component.

This leaves however the problem that conventional training in each of the disciplines with which we are concerned: librarianship or information science, computer science or the social sciences has failed to synthesise the technologies and social environments which I am suggesting in this paper are necessary for the design and implementation of networks. The technical questions of computer and telecommunciations design are inadequately understood by the social scientists, the political and economic questions by the technically oriented. This synthesis is not widely achieved in Britain either.

I would suggest that there is need for a course along the lines of that which is being developed jointly by Kingston Polytechnic and University College London, in which a combination of technical questions, specific situational analyses and information systems design are combined.

I think also that there is an argument for developing the line of work which the EDI has been looking to in the training of urban planners, where a network of training institutions is built up, accompanied by the production of training materials. I would like to suggest that an agenda for the investigation of currently available training materials, the indentification of gaps, and the design and production of suitable space-fillers, would not be out of place. The work of the water network shows how cheaply this can be done. The current work of UNCHS provides another example, as does that of UNCRD.

It has frequently been noted that no matter how much information you provide, or how you repackage it, you can't drive a user to make use of it. Training social scientists in the use of information is clearly important, indeed those trained in the information sciences might have come from being social scientists. The new breed of network planner and developer has to be dynamically oriented to marketing the service, otherwise it is simply more wasted effort.

8. Summary

What then is the feasibility of a Pan-African network in the social sciences?

I have tried to identify the following problems:

There is nothing automatic about defining the social sciences as separate from other human activity. Indeed the social sciences in western Europe exclude a whole range of topics which in the third world need to be included in an information system considering development.

The combined and uneven development of institutions in the region.

The social and political complexity of the region with no axiomatic definitions for bounding.

Fourthly there is a shrinking amount of money available for development activity.

On the other hand I have tried to identify the following advantages:

The increasing shortage of money is forcing people to be much more critical of activities;

advances in technology are changing the production, distribution, storage and accessability of information;

The feasibility of improving networking in the region has to start from these conditions. It must be recognised however that that which is technically feasible, might not be practical. Not practical for institutional, financial and political reasons.

The examples I have given from banking and the air travel industry show that the moving of large amounts of data with a large number of interactive users over a great distance is feasible, indeed is technically practical, but is unlikely to be feasible for the network of institutions with which we are concerning ourselves here. The studies undertaken for the ASTINFONET project give an idea of the orders of magnitude of funding required. Even with that funding, for example the amount spent on INFOTERRA, there is no indication that a significant improvement in information flow results.

The examples I have given from the small scale developments shows a wide variety of experiences on which to draw.

What is lacking are cost-benefit performance criteria as a result of the evaluation of which planning and investment decisions can be made. Drawing up the criteria and making a series of evaluations,so that decisions on appropriate technology and organisation can be made on sound economic bases, is a matter of urgency. Postage of data on floppy disc can be cheaper than data via satelite. Producing material in one format in one part of the world and converting it into another format in another part of the world should be decided upon by the economics of the issue. Information should be produced where it is cheapest.

Indexing and abstracting are more important than citation delivery for distance access. Full text delivery requires more complicated arrangements. The repacking or consolidation of information is probably more important. There is an experience on which to draw on topics such as ferro-cement or renewable energy. A number of studies could usefully be undertaken in fields of policy, planning, demography and other practical implmentations of the social sciences.

The principle on which networking should be based is: "Don't move resources, answer questions." The international division of labour should be used for the cheapest and most effective production of information at a particular level or in a particular medium. This means that expensive access to large scale data sources and its repackaging might well be best done in institutions in Europe then distributed in regional institutions. Facilities for producing floppy discs, cdroms etc fall into this category. Simply providing access on-line to international databases will provide unsatisfactory results.

Information moves hierarchicall;y and spatially: in LCDs the level of development of communications means that the spatial component is more expensive than the hierarchical. Thus my argument for developing the in-city networks.

Government regulations, such as taxes on importing microfilm, can make some designs more expensive than others. Where international opportunities exist for explaining these issues, they should be used, in the hopes of achieving change.

Currently available information systems have much scope for increasing their effectiveness at little extra cost. The microfiche catalogue of journals held at SOAS, and the joint scheme of London University could be made available for almost nothing. When fully computerised the holdings lists would be a very useful check on currency.

Tariffs on telecommunications and access to broadcast frequencies are major impediments to developmetn of communciaitons. The 1989 WARC conference will be a major opportunity for implementing differential tariffs. UNESCO should fund a series of studies on the contribution of communciations to economic development, such that developing countries can make the argument for a fair share of resources, if necessary then renting them out if they are not yet in a position to make full use of them.

Where major multinational companies are operating in a region with a functioning network - ICI, IBM, Citicorp, local national information planners should be trained in methods whereby deals can be negotiated for PTTs to take the fullest advantage of the facilities which become available.

Training materials on networking in all the ramifications which I have outlined in this paper shoud be prepared, seminars held and attempts made to influence what is being taught, both in OECD countries and in training institutions in the region.

Local planners should be incouraged to draw up local information plans in co-ordination with supprting institutions from OECD countries. These LIPs should be given legislative and funding formality.

The implementation of a plan is a longer-term activity than most funding agencies allow for. AID funding should be made available over a period of time to prevent the failure of projects after their initial development phase.

Above all else, my summary is that documents don't solve problems; problems are solved by providing a cadre of trained practitioners who are capable of intervening consciously in the world to implement a plan which they can monitor, evaluate and learn from. This is the task of the social scietist and the information scientist. It is this combination which we have to try to achieve.

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